

3187-01

What is claimed is:

- 5     1. A gas compressor and a lubricant therein wherein the lubricant comprises;
  - a) at least one oil of lubricating viscosity,
  - b) from about 0.1 to about 20 weight percent of a polymeric additive soluble in said lubricant at those weight percentages, and
  - c) optionally lubricant additives selected from antioxidants, friction
- 10    modifiers, dispersants, detergents, basicity reserve agents, dyes, and corrosion inhibitors.
2. A gas compressor and a lubricant therein according to claim 1, further including a chlorofluorocarbon, hydrochlorofluorocarbon, or hydrofluorocarbon gas within said compressor.
- 15    3. A gas compressor and a lubricant therein according to claim 2, wherein said lubricant is selected from carboxylate ester or polyalkylene glycol or blends of carboxylate ester or polyalkylene glycol with at least one other oil of lubricating viscosity.
- 20    4. A gas compressor and a lubricant therein according to claim 3, wherein said polymeric additive is selected from polymers with number average molecular weight from about 600 to about 1,000,000 amu having at least 10 weight percent of repeating units containing at least one oxygen or nitrogen atom.
- 25    5. A gas compressor and a lubricant therein according to claim 2, wherein said lubricant comprises a mineral oil, synthetic hydrocarbon, alkyl benzene, or alkyl naphthalene.
6. A gas compressor and a lubricant therein according to claim 4, wherein at least 30 weight percent of the repeating units of said polymeric additive contain one or more oxygen or nitrogen atoms.
- 30    7. A gas compressor and a lubricant therein according to claim 1, further including a low molecular weight hydrocarbon gas, carbon dioxide, ammonia, or air therein.

8. A gas compressor and a lubricant therein according to claim 7, wherein said lubricant comprises a carboxylate ester, polyalkylene glycol.

9. A gas compressor and a lubricant therein according to claim 8, wherein said polymeric additive is selected from polymers with number average molecular weight  
5 from about 600 to about 1,000,000 amu having at least 10 weight percent repeating units containing at least one oxygen or nitrogen atom.

10. A gas compressor and a lubricant therein according to claim 7, wherein said lubricant comprises at least 50 weight percent of hydrocarbon lubricants selected from polyalphaolefins, mineral oil, and alkyl aromatics.

10 11. A gas compressor and a lubricant therein according to claim 10, wherein said polymeric additive is selected from polymers with a number average molecular weight from about 600 to about 1,000,000 amu including homopolymer, copolymer, terpolymer etc comprising at least 40 weight percent repeating units from C2 to C30 linear or branched olefins.

15 12. A gas compressor and a lubricant therein according to claim 11, wherein said polymeric additive is a polyisobutylene or other polyolefin homopolymer or substantially polyolefin copolymer.

13. In a method of compressing a gas using a mechanical compressor lubricated with a lubricant, the improvement comprising adding from about 0.1 to about 20 weight percent of a number average 600 to 1,000,000 amu polymer that is soluble in  
20 said lubricant to said lubricant to suppress the tendency of said lubricant to be carried away from the compressor in the compressed gas output.

25 14. In a method according to claim 13, wherein said compressed gas comprises a low molecular weight hydrocarbon including natural gas, ammonia, or carbon dioxide.

15. In a method according to claim 13, wherein said polymeric additive comprises a homopolymer, copolymer, terpolymer etc comprising at least 40 weight percent repeating units from C2 to C30 linear or branched olefins.

16. In a method according to claim 13, wherein said polymeric additive comprises least 10 weight percent of repeating units containing at least one oxygen or nitrogen atom.  
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17. In a method according to claim 13, wherein said gas comprises a chlorofluorocarbon, hydrochlorofluorocarbon, or hydrofluorocarbon.

18. A gas compressor lubricant comprising

5 a) at least one oil of lubricating viscosity,

b) from about 0.1 to about 20 weight percent of a polymeric additive soluble in said lubricant at those weight percentages, and

c) optionally lubricant additives selected from antioxidants, friction modifiers, dispersants, detergents, basicity reserve agents, dyes, and corrosion inhibitors

10 wherein said weight percents are based on the weight of said lubricant and wherein said polymeric additive is not an acrylate polymer of weight average molecular weight of 70,000 or less when the oil of lubricating viscosity is a mineral oil, synthetic hydrocarbon, alkyl benzene or alkyl naphthalene.

19. A gas compressor lubricant comprising;

15 a) at least one oil of lubricating viscosity,

b) from about 0.02 to about 30 weight percent of a polymeric additive soluble in said lubricant at those weight percentages, and

c) optionally lubricant additives selected from antioxidants, friction modifiers, dispersants, detergents, basicity reserve agents, dyes, and corrosion 20 inhibitors

wherein said polymeric additive is not an acrylate polymer of weight average molecular weight of 70,000 or less when the oil of lubricating viscosity is a mineral oil, synthetic hydrocarbon, alkyl benzene or alkyl naphthalene, wherein said weight percents are based on the weight of said lubricant and wherein the combination of 25 polymeric additive and lubricating oil is characterized by the ability of said combination to reduce the amount of suspended oil droplets in the adjacent gas phase by at least 50% over a control of the same oil without said additive sufficiently sheared to generate gas suspended oil droplets.